CLAIMS

What is claimed is:

1. A catheter for use in a medical procedure, comprising:

a catheter body;

a catheter tip operably connected to the catheter body;

at least one electrically conductive element integrally formed with the catheter body; and

at least one energy delivery element operably connected to the at least one electrically conductive element.

2. The catheter of claim 1, wherein the electrically conductive element is formed on an inner sidewall of the catheter body.

3. The catheter of claim 1, wherein the electrically conductive element is embedded within a sidewall of the catheter body.

4. The catheter of claim 1, wherein the catheter body comprises:

an outer jacket;

a first inner tube attached to the outer jacket;

a second inner tube attached to the outer jacket; and

wherein the first inner tube abuts the second inner tube.

5. The catheter of claim 4, further comprising:

a second electrically conductive element integrally formed with the second inner tube;

wherein the at least one electrically conductive element is formed with the first inner tube; and

wherein the at least one electrically conductive element and the second electrically conductive element are operably connected.

6. The catheter of claim 5, wherein the operable connection between the at least one electrically conductive element and the second electrically conductive element is an electrical connection.

7. The catheter of claim 4, further comprising:

a second electrically conductive element integrally formed with the first inner tube;

wherein the at least one electrically conductive element is formed with the jacket; and

wherein the at least one electrically conductive element and the second electrically conductive element are operably connected.

8. The catheter of claim 7, wherein the at least one energy delivery element is integrally formed on the exterior of the jacket.

9. The catheter of claim 7, wherein the energy delivery element comprises an electrode flush with the surface of the tip.

10. The catheter of claim 9, wherein the electrode encompasses the entirety of an exterior surface of the tip.

11. A lead for eliciting an electrical response from tissue, comprising:

a lead body;

a lead tip operably connected to the lead body;

a first electrically conductive element integrally formed with the catheter body;

a first energy delivery element operably connected to the first one electrically conductive element;

a second electrically conductive element integrally formed with the catheter body; and

a first electrical sensing element operably connected to the second electrically conductive element.

12. The lead of claim 11, wherein the lead body is solid in lateral cross-section.

13. The lead of claim 11, further comprising a stylette; and

wherein the lead body further comprises a lumen, the lumen closed at a distal end of the lead body; and

the stylette is disposed within the lumen.

14. The lead of claim 11, further comprising:

a power source operably connected to the first electrically conductive element, the power source operative to transmit electrical impulses along the first electrically conductive element to the first energy delivery element at timed intervals; and

a diagnostic apparatus operably connected to the second electrically conductive element.

15. The lead of claim 14, further comprising an adapter, the adapter comprising:

a first adapter trace operably connecting the first electrically conductive element and the power source; and

a second adapter trace operably connecting the second electrically conductive element and the diagnostic apparatus.

16. A multi-layer catheter for use in a medical procedure, comprising:

an outer jacket;

a first inner jacket nested within the outer jacket and extending along at least a portion of the outer jacket;

a second inner jacket nested within the first inner jacket and extending along at least a portion of the first inner jacket;

an outer tube nested within the outer jacket and abutting the first inner jacket;

an inner tube nested within the outer tube and abutting the second inner jacket;

a first electrically conductive trace extending along the outer jacket; and

a first electrode formed on an outer surface of the outer jacket, the first electrode operably connected to the first electrically conductive trace.

17. The multi-layer catheter of claim 16, wherein:

a distal end of the first inner jacket and a distal end of the second inner jacket form a distal stair-step configuration in longitudinal cross-section; and

a proximal end of the first inner jacket and a proximal end of the second inner jacket form a stair-step configuration in longitudinal cross-section.

18. The multi-layer catheter of claim 17, further comprising:

a second electrically conductive trace extending along the outer jacket; and

an electrical element formed on an outer surface of the outer jacket, the first electrode operably connected to the first electrically conductive trace.

19. The multi-layer catheter of claim 18, further comprising:

an electrically nonconductive layer separating the first and second traces; and

wherein the first and second traces are longitudinally aligned.

20. The multi-layer catheter of claim 18, wherein the electrical element is a thermistor.